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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 23

Application Number: 08/904,312
Filing Date: July 31, 1997
Appellant(s): KAWAI ET AL.

Joseph P. Curtin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed March 07, 2002.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 19-24 (Group I), 1-4 (Group II), 9-10 (Group III), 11-16 (Group IV), 31/1/2, 31/9, 31/11/12/13, 31/19/20, 31/27/28, 32/3/4, 32/10, 32/14/15/16, 32/22/23, 32/29/30, 33/9, 33/11/12/13, 33/19/20, 33/27/28, 34/10, 34/14/15/16, 34/22/23 and 34/29/30 (Group V) do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,901,313	FUJIKURA et al.	2-1990
5,303,286	WIEDEMAN	4-1994
5,487,068	SMOLINSKE et al.	1-1996
5,497,371	ELLIS et al.	3-1996

Spragins et al., "Telecommunications Protocols and Design" Addison-Wesley Publishing Company, (July 1992), pp. 316-329.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 19-24, 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spragins et al. (Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992) in view of Fujikura et al. (US 4,901,313) submitted by Applicant.

Regarding claims 19-24, Spragins teaches an apparatus and method for receiving data from a primary station, comprising receiving said data I,0,0 (fig. 7.13b) and transmitting to the primary station at predetermined intervals (I,0,0 to I,2,0,P) in responsive to a polling signal P an error status signal REJ,1,F which indicates whether error correction information is required from the central station (page 328 section 7.6.3, figs. 7.13a-7.13b). Spragins does not explicitly teach that the primary station is a broadcast station, which broadcasts data to a plurality of secondary stations. However, this technique is not new as taught by Fujikura. Fujikura teaches secondary stations 2(1)-2(n) including means for receiving data from a broadcast station 2(0) a plurality of frames (col. 5, line 27) and means for transmitting an error status signal to the broadcast station (fig. 1, col. 5, lines 5-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the broadcast of Fujikura to the system of Spragins in order to conserve system's bandwidth.

Regarding claims 21/19, 21/20, 24/22, 24/23, Spragins also teaches a plurality of frames I,0,0-I,2,0,P (fig. 7.13b). The high data level control link HDLC of Spragins provides the error correction request signal REJ,1,F (fig. 7.13b) indicating negative acknowledgment (NACK) or selected ones of frames, which were not received correctly. Spragins differs from the claim invention in that the error correction request signal REJ,1,F (fig. 7.13b) can also indicate positive acknowledgment (ACK) or selected ones of frames, which were received correctly. However, according to Spragins a secondary station can provide an error status signal that comprises either an error correction request signal indicating a frame which were not correctly received NACK4 (fig. 7.9) or a signal that indicates that no error correction is required ACK6 using Byte-Count-Oriented Protocols (pages 319-321). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide Byte-Count-Oriented Protocols to the HDLC protocols in Spragins in order to allows piggybacking of positive acknowledgments and acknowledgment of multiple frames with one response.

Regarding claims 27-30, Spragins teaches an apparatus and method for receiving data from a primary station, comprising receiving said data in

a format comprising a sequence of frames (page 318, receive count of N frames); and transmitting signals to said primary station in a format including receive state information indicating the sequence number of the last in sequence of the received frames (page 318, supervisory frames can also be used for acknowledgments, receive count of 3), but not including a transmit state field (page 318, ACK and NACK frames each use a received count, but neither uses a send count). Spragins also teaches the frame format in Byte-Count-Oriented Protocols in Data Link Layer Protocols, page 316). Spragins does not explicitly teach that the primary station is a broadcast station, which broadcasts data to a plurality of secondary stations. However, this technique is not new as taught by Fujikura. Fujikura teaches secondary stations 2(1)-2(n) including means for receiving data from a broadcast station 2(0) and means for transmitting an error status signal to the broadcast station (fig. 1, col. 5, lines 5-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the broadcast of Fujikura to the system of Spragins in order to conserve system's bandwidth.

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiedeman (U.S. 5,303,286) in view of Smolinske et al. (U.S. 5,487,068) and Fujikura et al. (US 4,901,313) submitted by Applicant.

Regarding claims 1-4, Wiedeman teaches an apparatus for transmitting data relating to the status of user terminals in a mobile communications system from a central station 28 (fig. 2) having a database 20 as claimed to plurality of local stations 37, each having a local data base 27 as claimed, the apparatus comprising means for transmitting said data to each of said local stations 37. Wiedeman fails to take into account of error transmission when the central station transmits information in packets of frames to the local stations 37 which requires error detection in each local stations 37, wherein each local station 37 requests from the central station 28 for selective error correction and the central station 28 retransmits the selected frames in response. The concept of using a selectively automatic repeat request (selective repeat ARQ) for requesting a selected retransmission frame when error occurs from a local station to the central station is conventionally well known, which is taught by Smolinske. Smolinske teaches that when an error packet occurs the subscriber unit transmits a selective-repeat ARQ to the base station and

the base station retransmits the selected packet to the subscribers (col. 2, lines 16-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the error detection and selected error correction of Smolinske to the system of Wiedeman in order to provide reliable packet level communication. Wiedeman does not explicitly teach that the primary station is a broadcast station, which broadcasts data to a plurality of secondary stations. However, this technique is not new as taught by Fujikura. Fujikura teaches secondary stations 2(1)-2(n) including means for receiving data from a broadcast station 2(0) a plurality of frames (col. 5, line 27) and means for transmitting an error status signal to the broadcast station (fig. 1, col. 5, lines 5-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the broadcast of Fujikura to the system of Wiedeman in order to conserve system's bandwidth.

4. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smolinske et al. (U.S. 5,487,068) in view of Spragins et al. (Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992) and Fujikura et al. (US 4,901,313) submitted by Applicant.

Regarding claims 9-10, Smolinske teaches a method and apparatus for transmitting data to a plurality of data receiving stations, comprising: a base site transmitting data in a common channel in a format comprising a plurality of frames to receiving stations (col. 2, lines 31-33); receiving error correction request signals indicating selected ones of said frames as claimed (selective repeat ARQ, col. 2, lines 33-39); retransmitting said selected frames to said receiving stations and receiving from each of said local stations acknowledgment signals indicating the earliest in sequence of said frames which has not been received by that local station (col. 2, lines 36-42). Smolinske fails to explicitly teach that the selective repeat ARQ is implemented under high level data link format HDLC in which a new frame which has not previously been transmitted is transmitted only if a sequence order of said new frame is not greater than a sequence order of the earliest of said frames which has been indicated to but not have been received by any one of said receiving stations by a predetermined number. This technique is conventionally well known in the art, as taught by Spragins. Spragins teaches that a new frame I,2,0,P (fig. 7.13b) which has not previously been transmitted is transmitted only if the sequence order 2 of said new frame is less than a predetermined number 3 of frame I,3,0

greater than 1 the earliest of said frames I,1,0 which has not been received by any one of local stations (page 328, section 7.6.3, figs. 7.13a and 7.13b). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Spragins to the apparatus of Smolinske in order to reduce transmission delay. Smolinske does not explicitly teach that the primary station is a broadcast station, which broadcasts data to a plurality of secondary stations. However, this technique is not new as taught by Fujikura. Fujikura teaches secondary stations 2(1)-2(n) including means for receiving data from a broadcast station 2(0) a plurality of frames (col. 5, line 27) and means for transmitting an error status signal to the broadcast station (fig. 1, col. 5, lines 5-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the broadcast of Fujikura to the system of Smolinske in order to conserve system's bandwidth.

5. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smolinske et al. (U.S. 5,487,068) in view of Ellis et al. (U.S. 5,497,371) and Fujikura et al. (US 4,901,313) submitted by Applicant.

Regarding claims 11-12 and 14-15, Smolinske teaches a method and apparatus for transmitting data to a plurality of data receiving stations, comprising: a base site transmitting data in a common channel in a format comprising a plurality of frames to receiving stations (col. 2, lines 31-33); receiving unsolicited error correction request signals indicating selected ones of said frames as claimed (selective repeat ARQ, col. 2, lines 33-39); retransmitting said selected frames to said receiving stations in response to the request signals (col. 2, lines 36-42). The frames of Smolinske inherently includes frame sequence information N(S) indicating the sequence of each frame and receive state information N(R) indicating the sequence of any frames received from any of the receive stations because it is implemented with selective repeat ARQ protocol in the HDLC layer which is ISO/IEC 7809. Smolinske differs from the claim invention in that the frame does not include receive state information N(R) indicating the sequence of any frames. However, this technique is conventionally well known in the art, as taught by Ellis. Ellis teaches an HDLC format frame which includes the frame sequence number N(S) 4, but not including receive state information N(R) indicating the sequence of any frames (figs. 3-4). It would have been obvious to one of ordinary skill in the art at the time the invention was made

to provide the teaching of Ellis to the apparatus of Smolinske so that higher priority of information packets can be transmitted over a single communication link. Smolinske does not explicitly teach that the primary station is a broadcast station, which broadcasts data to a plurality of secondary stations. However, this technique is not new as taught by Fujikura. Fujikura teaches secondary stations 2(1)-2(n) including means for receiving data from a broadcast station 2(0) a plurality of frames (col. 5, line 27) and means for transmitting an error status signal to the broadcast station (fig. 1, col. 5, lines 5-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the broadcast of Fujikura to the system of Smolinske in order to conserve system's bandwidth.

Regarding claims 13 and 16, Smolinske as modified fails to teach that the N(S) sequence number is eleven bits in length. A skilled artisan would find that providing the N(S) sequence number with 11 bits in length or any other lengths obvious because it is not critical in the invention. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the 11 bits in length to N(S) sequence

number of Smolinske in order to reduce overhead signaling in the communication system.

6. Claims 31/1/2, 31/9, 31/11/12/13, 31/19/20, 31/27/28, 32/3/4, 32/10, 32/14/15/16, 32/22/23, 32/29/30, 33/9, 33/11/12/13, 33/19/20, 33/27/28, 34/10, 34/14/15/16, 34/22/23 and 34/29/30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiedeman (U.S. 5,303,286) in view of Smolinske et al. (U.S. 5,487,068) and Spragins et al. (Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992) and Ellis et al. (U.S. 5,497,371) and Fujikura et al. (US 4,901,313) submitted by Applicant .

Regarding claims 31/1/2, 31/9, 31/11/12/13, 31/19/20, 31/27/28, 32/3/4, 32/10, 32/14/15/16, 32/22/23, 32/29/30, 33/9, 33/11/12/13, 33/19/20, 33/27/28, 34/10, 34/14/15/16, 34/22/23 and 34/29/30, Fujikura teaches the satellite broadcast communication as stated in the above rejection.

7. Claims 35/21, 36/24, 37/21 and 38/24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spragins et al. (Telecommunications Protocols and Design, Addison-Wesley Publishing Company, July 1992) and Wiedeman (U.S. 5,303,286) and Fujikura et al. (US 4,901,313) submitted by Applicant .

Regarding claims 35/21, 36/24, 37/21 and 38/24, Fujikura teaches the satellite broadcast communication as stated in the above rejection.

Wiedeman also teaches the database of each received stations stores the status of user terminals as claimed (fig. 2 of Wiedeman).

(11) Response to Argument

According to the telephone interview on February 8, 2002, paper No. 20, the typographical error in the office action paper No. 15 has been corrected in this examiner's answer (agreed by the Appellant), and the status of claims has been corrected by the Appellant in the second supplemental appeal brief (verified by the examiner). Therefore, the status of claims stated above by the Appellant is correct.

The present invention uses a control global location register station in a satellite communication system to broadcast updated locations of mobile users to other global location register stations. The invention also concerns about packet data transmission impairments over a transmission link and remedies the problems by using High Level Data Link Control developed by the International Organization for Standardization (ISO 3309).

Regarding Issue I, claims 19-24 and 27-30, the Appellant contends the rejection with two points:

1) There is no suggestion in either Spragins or Fujikura to provide the broadcast of Fujikura to the system of Spragins in order to conserve system's bandwidth because Spragins already conserves system bandwidth by retransmitting only the erroneous frame, and Fujikura conserves system bandwidth by providing a master station that only retransmits a frame having a sequence number indicated by a received retransmission request frame as being abnormally received by a slave station; and

2) Spragins does not disclose an apparatus for receiving data from a broadcast station having means for transmitting to the broadcast station "at predetermined intervals" an error status signal because the nature of the error correction request signal used by Spragins is a random event, therefore, Spragins does not transmit the error correction request signal at predetermined intervals. And, Fujikuwa uses the sequence send number as seen by slave station, therefore, Fujikuwa cannot be considered to provide the claimed periodic intervals.

Regarding point I), the examiner respectfully disagrees, in Spragins it is a point to point communication. Especially, in every three frames transmitted by the primary station if there is an error occurs, the secondary

station responds with an error status signal REJ,I,F which indicates whether error correction information is required from the central station. Therefore, Spragins concerns about error correction in a point to point communication. As a result, the examiner agrees with the Appellant that the system of Spragins conserves the system bandwidth. However, it is only a point to point communication system. The system of Fujikuwa also concerns about error correction in a satellite communication system regarding a point to multipoint communication in which the secondary stations include means for receiving data from a broadcast station and means for transmitting an error status signal to the broadcast station for retransmission (col. 5, lines 55-59) so that the system can improve system bandwidth (throughput, col. 2, line 47). Consequently, when the system of Spragins is modified as a point to multipoint communication system with the error correction of Fujikuwa, it will improve "further" system's throughput and, therefore, the bandwidth.

Regarding point II), the examiner respectfully disagrees, the nature of the error correction request signal used by Spragins is "not" a random event. Indeed, Spragins teaches that the primary station sends three information frames every interval to the secondary station, with the P bit set

in the third frame to allow the secondary station to response or transmit an error status signal REJ,1,F which indicates whether error correction information is required from the primary station (page 328, section 7.6.3, and figs. 7.13a-7.13b). If the error correction request signal used by Spragins is a random event, Spragins does not have insert the P bit set every third frame to allow the secondary station to respond. Therefore, Spragins as modified by Fujikuwa does include means for transmitting to the broadcast station at predetermined intervals an error status signal.

Regarding Issue II, claims 1-4, the Appellant contends the rejection with the only point:

There is no suggestion in Wiedeman or Smolinske "to provide the broadcast for Fujikura to the system of Wiedeman in order to conserve bandwidth".

In response, the examiner respectfully disagrees, in Wiedeman and Smolinske, it is a point to point communication. Therefore, Wiedeman as modified by Smolinske will cure about error correction in a point to point communication, and thereby conserve the bandwidth. However, it is a point to point communication system. Consequently, when the system of

Wiedeman and Smolinske is modified as a point to multipoint communication system with the error correction of Fujikuwa, it will improve "further" system's throughput and, therefore, the bandwidth.

Regarding Issue III, claims 9-10, the Appellant contends the rejection with the only point:

Spragins provides no disclosure that a central station includes a sliding window that broadcasts a new frame that has not been previously broadcast only if a sequential order of the new frame is not greater than a sequence order of the earliest frames that has been indicated to not have been received by any one of the receiving stations by a predetermined number.

In response, the examiner respectfully disagrees. Especially, Spragins teaches that a new frame I,2,0,P (fig. 7.13b) which has not previously been transmitted is transmitted only if the sequence order 2 of said new frame is less than a predetermined number 3 of frame I,3,0 greater than 1 the earliest of said frames I,1,0 which has not been received by any one of local stations (page 328, section 7.6.3, figs. 7.13a and

7.13b). Therefore, the combination of Smolinske, Spragins and Fujikura does teach this limitation.

Regarding Issue IV, claims 11-16, the Appellant repeats the argument that there is no suggestion in either Smolinske or Ellis to provide the broadcast of Fujikura to the system of Spragins in order to conserve system's bandwidth.

In response, this argument has been addressed in the above paragraphs.

Regarding Issue V, claims 31/1/2, 31/9, 31/11/12/13, 31/19/20, 31/27/28, 32/3/4, 32/10, 32/14/15/16, 32/22/23, 32/29/30, 33/9, 33/11/12/13, 33/19/20, 33/27/28, 34/10, 34/14/15/16, 34/22/23 and 34/29/30, the Appellant repeats the argument that there is no suggestion in either Weideman, Smolinske, Ellis to provide the broadcast of Fujikura to the system of Spragins in order to conserve system's bandwidth.

In response, this argument has been addressed in the above paragraphs.

Regarding Issue VI, claims 35/21, 36/24, 37/21 and 38/24, the Appellant repeats the argument that there is no suggestion in either Weideman, Spragins to provide the broadcast of Fujikura to the system of Spragins in order to conserve system's bandwidth.

In response, this argument has been addressed in the above paragraphs.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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Primary Examiner
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June 20, 2002

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